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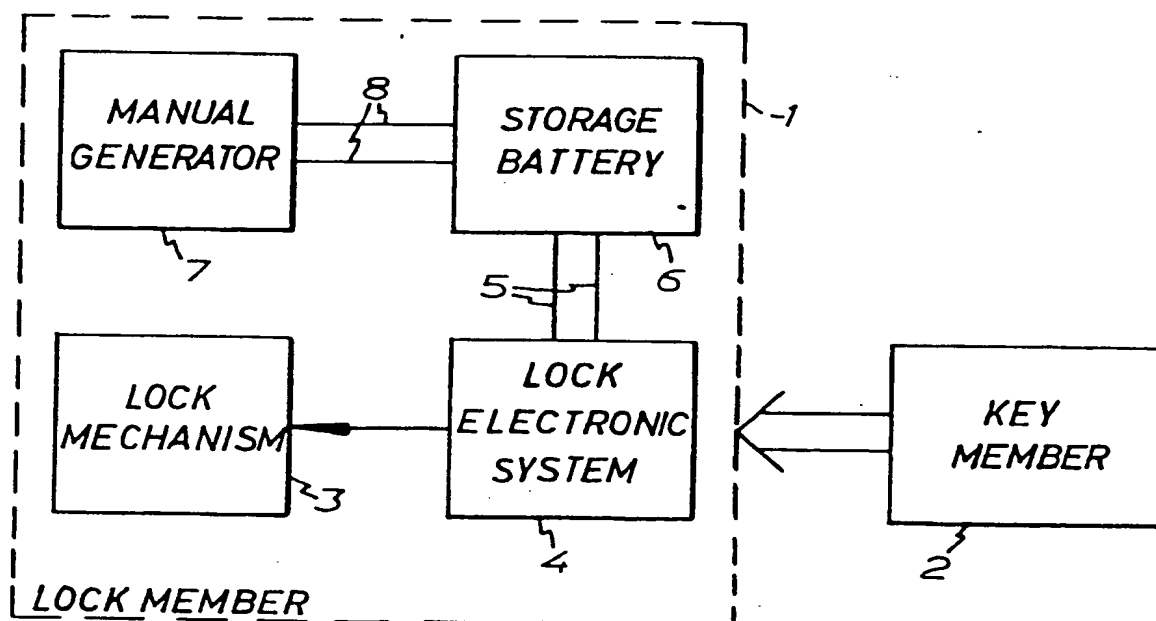
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(54) Title: ELECTRONIC LOCK



(57) Abstract

An electronic lock comprising electronic circuits (4) for determining the identity of a presented key (2) and releasing an opening movement of a lock mechanism (3) is provided with a handle-operated electric generator (7) connected to a storage battery (6) for supplying current to the electronic circuits (4).

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ELECTRONIC LOCK

The present invention concerns an electronic lock.

For a number of reasons, electronic locks are preferred to entirely mechanical locks in many instances.

An electronic lock is a lock where electronic circuits are utilized for determining the identity of a presented key and for releasing an opening movement of essentially ordinary mechanical details, if the identity of the key is the correct one.

To be able to function, the electronic circuits of an electronic lock must be supplied with current, for which reason the lock has to be connected to the electric mains or to some kind of battery. In both cases, a supply current failure may prevent normal opening of the lock, and this is, of course, a serious disadvantage.

The present invention aims at providing an electronic lock in which the current supply is guaranteed in a simple manner.

To achieve this aim in an electronic lock of the type mentioned above, the lock is provided with a manually operable electric generator connected to an energy storage device adapted to supply the electronic circuits with the required current.

According to a preferred embodiment of the lock comprised by the present invention, the electric generator is operable by means of a handle for actuating the lock.

The invention will be described in more detail in the following, reference being had to the accompanying drawing in which:-

Fig. 1 is a block diagram of an electronic lock according to the invention;

Fig. 2 is a highly diagrammatic side view of an embodiment of an electric generator in a lock according to the invention.

The electronic lock illustrated in Fig. 1 comprises in known manner a lock member 1 which may be mounted in.



a door leaf, and a key member 2. The lock member 1 comprises a lock mechanism 3 which may be of any known construction whatsoever, and also a lock electronic system 4. The key member 2 contains information which identifies the  
5 key member 2 and can be transmitted, in some known manner, to electronic circuits provided in the lock electronic system 4 to be determined thereby as the correct information for opening the lock. In such cases, the lock mechanism 3 is actuated or released by the lock electronic  
10 system 4.

The lock electronic system 4 is supplied with current via lines 5 from a storage battery 6 which can be charged by means of a manually operable electric generator 7 via lines 8.

15 As has been shown diagrammatically in Fig. 2, the electric generator 7 may be equipped with a permanent magnet rotor 10 having alternating magnetic poles around its periphery and an iron yoke 11 on which a coil 12 is wound. The coil 12 is connected to the storage battery 6  
20 via a rectifier 13.

The rotor 10 can be rotated clockwise by means of a push bar 15 which is guided between pins 14 and is articulated with a handle 16. When the handle is depressed, the push bar is displaced towards the rotor 10, and a  
25 spring 17 articulated with the push bar 15 will be compressed. At the end of the movement of the push bar 15 a cam surface 18 on the push bar causes such a rotation of the rotor 10 and the end of the spring 17 engaging a notch provided in the periphery of the rotor that the energy  
30 stored in the spring 15 by the compression thereof will be released and converted into a rotational movement of the rotor 10. During rotation of the rotor 10, an alternating voltage is induced in the coil 12 and, after rectification in the rectifier 13, charges the storage battery 6.

35 The handle 16 preferably is the one normally provided for manually actuating the lock mechanism 3 of the lock member.

It will be appreciated that the electric generator



and the manual operation thereof can be accomplished in many other ways than that described above; for example, the generator may be a piezoelectric generator. Those skilled in the art will also realise that any other energy storage device, such as a capacitor, may be substituted for the storage battery 6.



## CLAIMS

1. An electronic lock comprising electronic circuits (4) for determining the identity of a presented key (2) and releasing an opening movement of a lock mechanism (3), characterized by a manually operable electric generator (7) which is connected to an energy storage device (6) adapted to supply current to the electronic circuits (4).

2. An electronic lock as claimed in claim 1, characterized in that the electric generator (7) is operable by means of a handle (16) adapted to actuate the lock mechanism (3).

3. An electronic lock as claimed in claim 2, characterized in that the electric generator (7) comprises a magnet (10) which is rotatable by means of the handle (16), a coil (12), and a rectifier (13).

4. An electronic lock as claimed in claim 1 or 2, characterized in that the electric generator (7) is a piezoelectric generator.





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FIG. 1

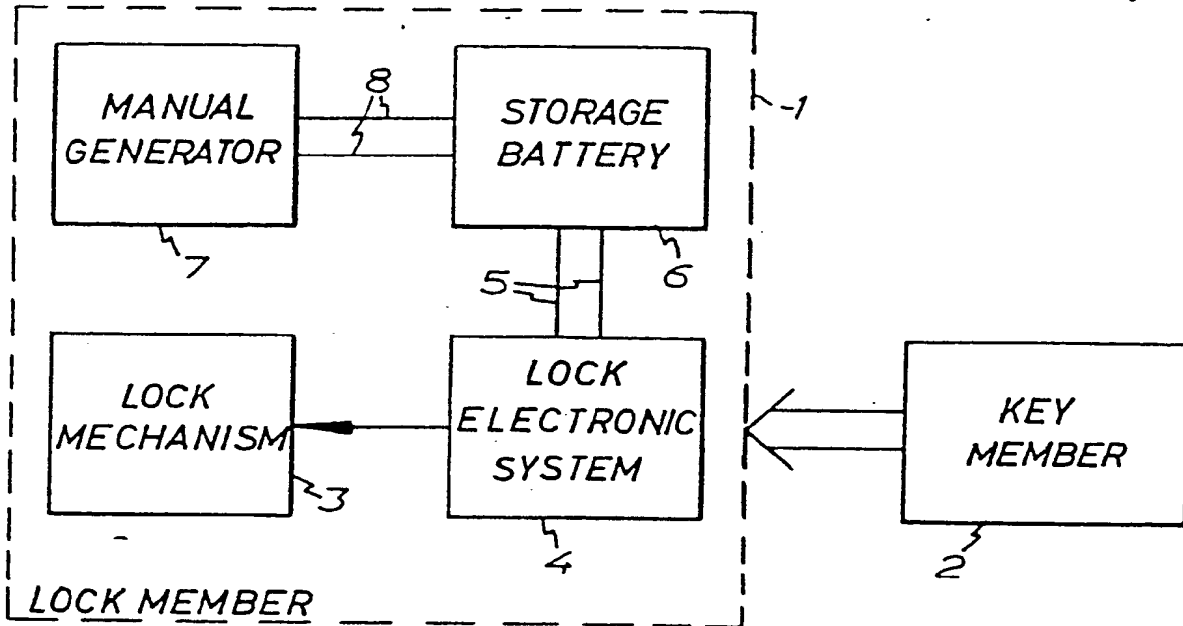
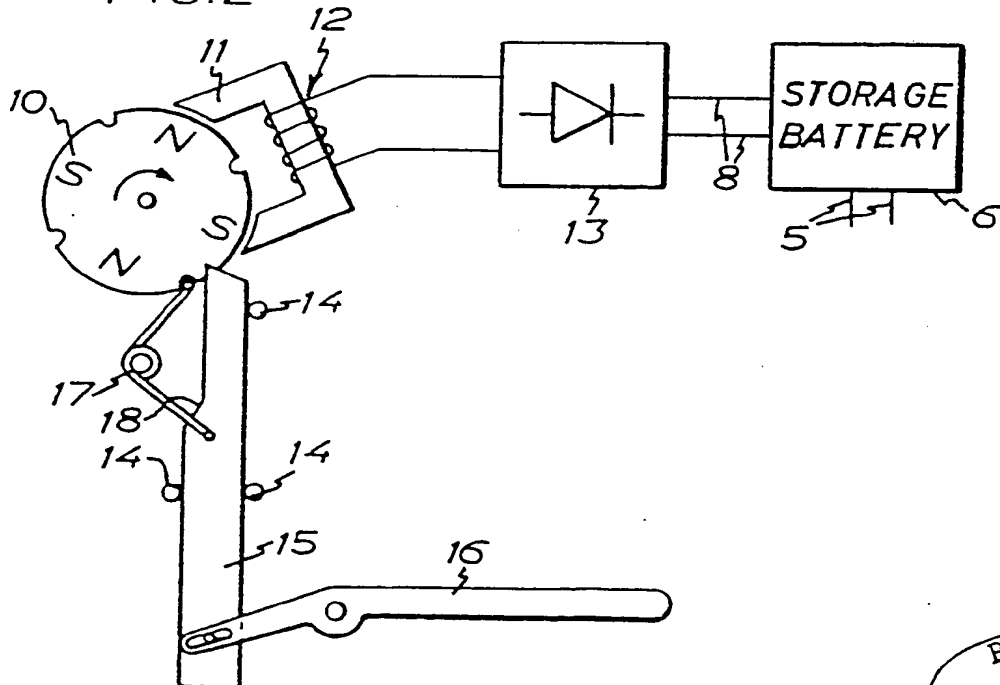


FIG. 2



# INTERNATIONAL SEARCH REPORT

International Application No PCT/SE80/00155

## I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) \*

According to International Patent Classification (IPC) or to both National Classification and IPC 3

E 05 B 47/00

## II. FIELDS SEARCHED

Minimum Documentation Searched 4

Classification System

Classification Symbols

IPC 3

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E 05 B 47/00-49/04; M 02 K 7/08

68a:38-42

70:271, 277-283, 434; 310:75; 292:144, 201

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched 5

SE, NO, DK, FI classes as above

## III. DOCUMENTS CONSIDERED TO BE RELEVANT 14

Category \*

Citation of Document, 14 with indication, where appropriate, of the relevant passages 17

Relevant to Claim No. 18

- |   |   |  |
|---|---|--|
| X | DE, A, 2 324 392 published 1974, December 5,<br>Recognition Devices Inc |  |
| X | US, -A, 1 365 814 published 1921, January 18,<br>Bryce                  |  |
| X | US, A, 971 690 published 1910, October 4,<br>Schmidt                    |  |

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## IV. CERTIFICATION

Date of the Actual Completion of the International Search \*

1980-09-30

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1980-10-01

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Christer Wendenius